AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the piezoelectric element being free from hillocks, cracks, and peeling and including a stack structure in which a bottom electrode, a piezoelectric body thin film, and a top electrode are sequentially formed on a substrate,

the bottom electrode being made of an oriented W layer of which a (111) plane of W is parallel to a surface of the substrate, and

the piezoelectric body thin film being formed of a c-axis-oriented aluminum nitride thin film having a rocking curve full width half maximum (RCFWHM) not exceeding 2.5°.

2. (Original) The piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 1, wherein the substrate is a glass substrate.

3. (Original) A piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the piezoelectric element being free from hillocks, cracks, and peeling and including a stack structure in which a bottom electrode, a piezoelectric body thin film, and a top electrode are sequentially formed on a substrate, the bottom electrode containing as a bottom layer an adhesive layer adhering to the substrate,

the bottom electrode being made of a stack body,

the stack body having a surface layer made of a metal layer having an electronegativity of around 1.4 and such an orientation that a crystal plane of a metal having an identical atomic configuration to an atomic configuration on a (001) plane of aluminum nitride and an almost equal atomic distance to an atomic distance on the (001) plane is parallel to a surface of the substrate, and

the piezoelectric body thin film being formed of a c-axis-oriented aluminum nitride thin film having a rocking curve full width half maximum (RCFWHM) not exceeding 2.5°.

4. (Original) The piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 3, wherein the substrate is a glass substrate.

5. (Original) A piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the piezoelectric element being free from hillocks, cracks, and peeling and including a stack structure in which a bottom electrode, a piezoelectric body thin film, and a top electrode are sequentially formed on a substrate, the bottom electrode containing as a bottom layer an adhesive layer adhering to the substrate,

the bottom electrode being made a stack body containing as a surface layer such an oriented W, Pt, Au, or Ag layer that a (111) plane of W, Pt, Au, or Ag is parallel to a surface of the substrate, and

the piezoelectric body thin film being formed of a c-axis-oriented aluminum nitride thin film having a rocking curve full width half maximum (RCFWHM) not exceeding 2.5°.

6. (Original) The piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 5, wherein the bottom electrode is made up of either two layers of Ti/Pt or Cr/Pt in accordance with a notation, "the first layer formed on the substrate/the second layer formed on the first layer" or three layers of Ti/Pt/Au, Ti/Ni/Au, or Cr/Ni/Au in accordance with a notation, "the first layer formed on the substrate/the second layer formed on the first layer/the third layer formed on the second layer."

7. (Original) The piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 5, wherein the substrate is a glass substrate.

8. (Original) A method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the method comprising the sequential steps of:

forming a bottom electrode on a substrate from such an oriented W layer that a (111) plane of W is parallel to a surface of the substrate by sputtering at a temperature from room temperature to a low temperature at which no spaces develop between W particles; and

forming a piezoelectric body thin film of a c-axis-oriented aluminum nitride thin film having a rocking curve full width half maximum (RCFWHM) not exceeding 2.5° on the bottom electrode; and

forming a top electrode on the piezoelectric body thin film.

9. (Previously Presented) The method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 8, wherein the substrate is a glass substrate.

10. (Previously Presented) The method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 8, wherein the bottom electrode is deposited by r.f. plasma-assisted sputtering.

11. (Original) A method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the method comprising the sequential steps of:

in forming, on a substrate, a bottom electrode of a two- or more-layered stack structure including an adhesive layer adhering to the substrate, firstly depositing the adhesive layer by sputtering at a temperature from room temperature to a low temperature at which no spaces develop between particles and then depositing as a surface layer of the bottom electrode a metal layer by sputtering at a temperature from room temperature to a low temperature at which no spaces develop between particles so that the metal layer exhibits such orientation that a crystal plane of a metal is parallel to a surface of the substrate, by using such a metal having an electronegativity of around 1.4 that a crystal plane of the metal has an identical atomic configuration to an atomic configuration on a (001) plane of aluminum nitride and an almost equal atomic distance to an atomic distance on the (001) plane;

forming a piezoelectric body thin film of a c-axis-oriented aluminum nitride thin film having a rocking curve full width half maximum (RCFWHM) not exceeding 2.5° on the bottom electrode; and

forming a top electrode on the piezoelectric body thin film.

12. (Original) The method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 11, wherein the substrate is a glass substrate.

13. (Original) The method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 11, wherein the bottom electrode is deposited by r.f. plasma-assisted sputtering.

14. (Original) A method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the method comprising the sequential steps of:

in forming, on a substrate, a bottom electrode of a two- or more-layered stack structure including an adhesive layer adhering to the substrate, firstly depositing the adhesive layer by sputtering at a temperature from room temperature to a low temperature at which no spaces develop between particles and then depositing as a surface layer an oriented W, Pt, Au, or Ag layer that a (111) plane of W, Pt, Au, or Ag is parallel to a surface of the substrate by sputtering at a temperature from room temperature to a low temperature at which no spaces develop between particles;

forming a piezoelectric body thin film of a c-axis-oriented aluminum nitride thin film having a rocking curve full width half maximum (RCFWHM) not exceeding 2.5° on the bottom electrode; and

forming a top electrode on the piezoelectric body thin film.

15. (Original) The method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 14, wherein the substrate is a glass substrate.

16. (Original) The method of manufacturing a piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 14, wherein the bottom electrode is deposited by r.f. plasma-assisted sputtering.

17. (Currently Amended) A piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the piezoelectric element including a bottom electrode, a piezoelectric body thin film of aluminum nitride, and a top electrode stacked in this order on a substrate; and

the aluminum nitride having a rocking curve (RCFWHM) not exceeding 2.5°~~.~~ ,

wherein the bottom electrode is either a single, metal layer or a stack body including an adhesive layer adhering to the substrate and one or more metal layers on the adhesive layer~~.~~; and

wherein the stack body has a surface layer made of a metal having a crystal plane having an identical atomic configuration to an atomic configuration on a (001) plane of aluminum nitride and an almost equal atomic distance to an atomic distance on the (001) plane.

18. (Cancelled)

19. (Currently Amended) The piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim ~~18~~17, wherein the stack body has a surface layer made of a metal having an electronegativity between 1.3 and 1.5 inclusive.

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Original) The piezoelectric element using a superhigh-oriented aluminum nitride thin film as set forth in claim 17, wherein the substrate is a glass substrate.

24. (New) A piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the piezoelectric element including a bottom electrode, a piezoelectric body thin film of aluminum nitride, and a top electrode stacked in this order on a substrate; and

the aluminum nitride having a rocking curve (RCFWHM) not exceeding 2.5°,

wherein the bottom electrode is either a single, metal layer or a stack body including an adhesive layer adhering to the substrate and one or more metal layers on the adhesive layer; and

wherein the stack body has as a surface layer an oriented W, Pt, Au, or Ag layer that a (111) plane of W, Pt, Au, or Ag is parallel to a surface of the substrate.

25. (New) A piezoelectric element using a superhigh-oriented aluminum nitride thin film,

the piezoelectric element including a bottom electrode, a piezoelectric body thin film of aluminum nitride, and a top electrode stacked in this order on a substrate; and

the aluminum nitride having a rocking curve (RCFWHM) not exceeding 2.5°,

wherein the bottom electrode is either a single, metal layer or a stack body including an adhesive layer adhering to the substrate and one or more metal layers on the adhesive layer; and

wherein the stack body is made up of either two layers of Ti/Pt or Cr/Pt in accordance with a notation, "the first layer formed on the substrate/the second layer formed on the first layer" or three layers of Ti/Pt/Au, Ti/Ni/Au, or Cr/Ni/Au in accordance with a notation, "the first layer formed on the substrate/the second layer formed on the first layer/the third layer formed on the second layer."